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EXAMINER

PICH, PONNOREAY

ART UNIT	PAPER NUMBER
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2135

DATE MAILED: 07/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/055,276

Applicant(s)

NELSON ET AL.

Examiner

Ponnoreay Pich

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 2-5, 9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 6-8 and 11-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 2-5 and 9-10 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/23/2002</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claims 1-22 have been examined and are pending.

#### ***Information Disclosure Statement***

The IDS submitted by the applicant have been considered.

#### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 2-5 and 8, drawn to use of a database on a network server to determine keyboard sequences, classified in class 707, subclass 10.
- II. Claims 9-10, drawn to graphical representation of a computer keyboard, classified in class 710, subclass 15.
- III. Claims 1, 6-7, 11-22, drawn to determining triviality of proposed user's passwords, classified in class 713, subclass 183.

The inventions are distinct, each from the other because of the following reasons:

Inventions I, II, and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as visually monitoring a user's interaction with a keyboard. Invention II has separate utility such as a keyboard simulation system. Invention III has separate utility such as determining if a user's proposed password is trivial. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups II and III, the search for Group II

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is not required for Groups I and III, and the search for Group III is not required for Groups I and II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. William Kennaman (845-433-1175) on 6/27/2005 a provisional election was made with traverse to prosecute the invention of Group III, claim 1, 6-7, and 11-22. Affirmation of this election must be made by applicant in replying to this Office action. Claim 2-5 and 8-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Specification***

The disclosure is objected to because of the following informalities:

1. On page 9, paragraph 30, the examiner believes there may be errors on line 4.

Applicant is asked to double check. Note the value for F3 given in line 4 is not the same as the value given in line 5. The formula on line 4 also doesn't seem to agree with the formula on line 3, even though applicant used "or" to indicate that they should be equivalent.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-22 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.

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1. As per claim 11, the formula recited in line 12 is unclear. The examiner is uncertain if applicant meant  $\Delta X_{n-1}$  (i.e.  $\Delta X_n$  and then subtract 1) or  $\Delta X$  with a subscript of (n-1).
  2. Claim 17 recites a similar formula which is unclear on line 14.
  3. A similar problem exists for the formula recited in claims 12 and 18, line 3 for  $\Delta Y$ .
  4. Similar problems exist for the formulas recited in claims 13 and 19, lines 2 and 3 respectively.
  5. Any claims not specifically addressed are rejected by virtue of dependency.
- Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

Claims 1, 6-8, and 11-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swift et al (US 5,719,941) in view of IBM Technical Disclosure Bulletin ("Passphrase Filter for Detection/Rejection of Weak User-Selected Passphrases), herein referred to as IBM.

**Claim 1:**

Swift discloses a network system for determining trivial keyboard sequences of proposed passwords, comprising:

1. A user system (Fig 1, items 20-26).
2. A server in communication with said user systems via a communication link (Fig 1).

3. A data storage device coupled to said server (Fig 1), said data storage device housing:
  - a. A master password database including a user account associated with said user system (Fig 1, item 34).
  - b. A password verification mechanism executable by said server (col 9, lines 35-50).
  - c. Wherein, upon execution, said password verification mechanism performs an algorithm on said proposed password and determines triviality of said proposed password according to criteria specified in said algorithm (col 9, lines 35-50).

Swift does not explicitly disclose a computer keyboard input device associated with said user system. However, such a keyboard input device must exist for a user to be able to input a password into Swift's system.

Swift also does not disclose a database including a keyboard profile wherein said keyboard profile specifies a physical layout of characters and function keys on said keyboard input device. However, such a limitation is disclosed by IBM (p97 and p98, first two paragraphs). In light of this, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified Swift's invention according to the limitations recited in claim 1 using IBM's teachings. One of ordinary skill would have been motivated to do so as IBM's teachings describes a method for detection/rejection of weak user selected passphrases (p95, paragraph 1).

**Claim 6:**

Swift does not disclose wherein said algorithm comprises three formulas wherein:

1. A first formula checks for vertical triviality of said proposed password.
2. A second formula checks for horizontal triviality of said proposed password.
3. A third formula checks for diverse keystroke patterns of said proposed password wherein said second formula is executed upon successful validation of said first formula and said third formula is executed upon successful validation of said second formula.

However, the above limitations are obvious to the combination invention of Swift and IBM. IBM discloses a pattern and letter frequency analysis method which reads on the above limitations (p97 and p98). In the pattern analysis method disclosed by IBM, each key on the keyboard is numbered. Then, a proposed password is analyzed using formula which checks the first order difference—the horizontal triviality of the proposed password or passphrase. Then, a formula to check the second order difference is used—checking the vertical triviality. The letter frequency analysis disclosed on page 98 reads on the diverse keystroke pattern analysis of the password. It is further obvious that each proceeding algorithm would be executed upon successful validation of each preceding algorithm as the way most conditional statements are written in software development practices is that the latter checks aren't executed if the earlier checks results in false statements. One of ordinary skill would be motivated to do this because

it is common practice in software development. The motivation to combine Swift and IBM according to the limitations recited in claim 6 is the same as the ones given in claim 1. Note that the order in which the three formulas are executed is an arbitrary choice which does not affect the functionality of the applicant's or Swift and IBM's combination invention.

**Claim 7:**

Swift further discloses wherein successful validation of the proposed password causes the password verification mechanism to transmit notification to at least one of a requesting user system and an administrator system and update said master password database (col 9, lines 50-63).

**Claim 8:**

Swift does not explicitly disclose wherein said server and said data storage device comprise one unit. However, servers and data storage devices being comprised of one unit are well known in the art—i.e. a server computer with a hard drive. Further, in Figure 1, First Network Server 12 is shown to contain Password Administration Facility 32 and Tables 34 and 36. This implies that server 12 must contain a data storage device comprising one unit with server 12 or server 12 could not contain these items as there must be a storage device within server 12 to hold information for items 32, 34, and 36 somehow.

**Claims 11 and 17:**



Swift discloses a method as recited in claim 11 and a storage medium encoded with machine-readable computer program code as recited in claim 17 for determining keyboard triviality of proposed passwords over a network system, comprising:

1. Receiving a request for a proposed password from a user system (Fig 2 and 3).
2. Retrieving user account data related to said user system (Fig 2 and 3).
3. Checking said proposed password against existing password quality rules stored in a master password database (col 9, lines 35-50), wherein a requester of said proposed password is redirected to select an alternative password if said checking results in an unacceptable password (col 9, lines 42-50).

Swift does not explicitly disclose:

1. Providing a keyboard profile associated with said user system, said keyboard profile including a unique identifier.
2. Performing an algorithm on said proposed password, said algorithm including a first formula, comprising:

$$(\Delta X_1 + \Delta X_2 + \dots + \Delta X_n - 1) / (n - 1) > 0;$$

wherein:

1. X represents an X axis.
2. Y represents a Y axis.
3. n represents a number of characters comprising said proposed password.
4.  $\Delta X_1$  represents an absolute value of a difference between a first and second data coordinate on said X axis.

5. And wherein further data coordinates are plugged into said first formula for determining vertical triviality.

However, IBM discloses a pattern analysis method for detection of a weak user-selected passphrase/password which renders the above limitation obvious (p97 and p98, first two paragraphs). In the pattern analysis method disclosed by IBM, each number and letter key on the keyboard is assigned a rank number from 1-36. This reads on the limitation of a keyboard profile. Note that different types of keyboards are known, so different keyboard profiles with unique identifiers are also obvious. IBM also discloses that the rank number analysis can be used on a 'qwerty' keyboard, meaning IBM also recognizes different keyboard profiles (p98, second paragraph). Further, in the pattern analysis method disclosed by IBM, the difference in rank (first order difference) of each character in the proposed password is determined (p97, item 4). This analysis of the first order difference reads on the above first formula (which is used to determine horizontal triviality).

In light of the above, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified Swift's invention according to the limitations recited in claims 11 and 17. One of ordinary skill would have been motivated to do so for the same reasons given in claim 1.

**Claims 12 and 18:**

Swift does not explicitly disclose wherein said algorithm includes a second formula executable upon successful completion of first formula, comprising:

$$(\Delta Y_1 + \Delta Y_2 + \dots + \Delta Y_{n-1}) / (n - 1) > 0;$$

wherein:

1. X represents an X axis.
2. Y represents a Y axis.
3. n represents a number of characters comprising said proposed password.
4.  $\Delta Y_1$  represents an absolute value of a difference between a first and second data coordinate on said Y axis.
5. And wherein further data coordinates are plugged into said second formula for determining vertical triviality.

However, the above limitation is obvious to the combination invention of Swift and IBM. Note that on page 97, item 4, IBM also discloses a second order difference analysis. This reads on the above formula wherein a test of vertical triviality is made. Motivation to combine Swift and IBM are the same as the ones given in claim 1.

**Claims 13 and 19:**

Swift does not explicitly disclose wherein said algorithm includes a third formula, comprising:

$$(\Delta X_1 + \Delta Y_1 + \Delta X_2 + \Delta Y_2 + \dots + \Delta X_{n-1} + \Delta Y_{n-1}) / (2(n - 1)) > S;$$

wherein:

1. X represents an X axis.
2. Y represents a Y axis.
3. n represents a number of characters comprising said proposed password.

4.  $\Delta X1$  represents an absolute value of a difference between a first and second data coordinate on said X axis.
5.  $\Delta Y1$  represents an absolute value of a difference between a first and second data coordinate on said Y axis.
6. S represents a variable parameter representing a mean distance between character keys of proposed passwords.
7. And wherein further data coordinates are plugged into said third formula for determining diverse keystroke patterns of said proposed password.

However, the examiner submits that the above limitation is obvious to the combination invention of Swift and IBM. Note that the formula on the left side of the equation of the above limitation is the summation of the first two formulas used to determine both the horizontal and vertical triviality. As discussed already, the teachings of IBM renders these two formulas obvious. It is further obvious that viewed together, the first two formulas can also be used to determine how diverse the characters in the proposed password are as the characters must both pass horizontal and vertical triviality tests to be diverse. How diverse the characters must be is an arbitrary choice determined by parameter S; it is obvious to have such a parameter be defined in the combination invention of Swift and IBM. Further, IBM also discloses on page 98 that a letter frequency analysis is performed on proposed passwords, which also reads on the diverse keystroke analysis of the above limitation. Motivation to combine Swift and IBM are the same as the ones given in claim 1.

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**Claims 14 and 20:**

Claims 14 and 20 recite limitations substantially similar to claim 7 and are rejected for the same reasons.

**Claims 15 and 21:**

Swift does not explicitly disclose wherein said identifier is linked to said user account, and wherein further, said keyboard profile is automatically provided over said network via said link. However, these limitations are obvious to the combination of Swift and IBM. Note that IBM discloses that more than one keyboard profiles are known (p98, second paragraph). Further, as the analysis of the password in the combination invention of Swift and IBM depends on the keyboard profile, the keyboard profile of the user must be known by the password analysis algorithm. Each profile must have a unique identifier and each user account must be associated with a profile. Swift shows that the user account information is kept on a server (Fig 1), therefore when a user communicates via a client, the keyboard profile of the client must be sent over a network link to the server so that the proposed password analysis can be performed.

**Claims 16 and 22:**

Swift does not explicitly disclose wherein a list of available keyboard profiles is present to said user selection, and wherein further, said user system selects an appropriate profile. However, multiple keyboard profiles available for user selection are well known in the art (i.e. multiple language keyboards). It is obvious that since multiple profiles exist, a user can select the different profiles on a user system according to the user's preference as to what type of keyboard they prefer to type on. In light of this, it

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would have been obvious to one of ordinary skill in the art to have modified Swift and IBM's combination invention according to the limitations recited in claims 16 and 22. One of ordinary skill would have been motivated to do so as it would allow users to select the keyboard profile most suited to their typing preferences.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ponnoreay Pich whose telephone number is 571-272-7962. The examiner can normally be reached on 8:00am-4:30pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 571-272-3859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PP

*H.S. G.*  
Primary Examiner  
Art Unit 2135